



The XM395 Precision Guided Mortar Munition (PGMM) Delivers Increased Range and Lethality

Peter J. Burke

In less than 5 years, the U.S. Army will begin arming maneuver commanders with precision munitions that they can fire from their own 120mm mortar systems. The XM395 PGMM is a smart 120mm mortar round currently under development by Product Manager (PM) Mortar Systems, the total life-cycle manager for advanced mortar weapon, digital fire control and ammunition programs. It is scheduled to be completed in 2008 and fielded by 2010.

(Top) The 120mm smooth-bore, semiactive laser PGMM looks, feels and loads almost identically to the mortar system in service today. It is capable, however, of defeating hardened and stationary targets with far fewer rounds, at greater ranges and with much less collateral damage than current mortar ammunition. (U.S. Army photo courtesy of PM Mortars.)

(Background) PFC Joshua Wood, 1st Battalion, 198th Armor Regiment, 155th Brigade Combat Team, sets up a tank-mounted 120mm mortar system near Najaf, Iraq. The XM395 PGMM will also be fielded to wheeled and tracked armor forces that currently employ 120mm mortar systems on their vehicles. (U.S. Army photo by Edward Martens.)

The 120mm mortar system is a key lethality component of Army modularity, giving both light and heavy forces extended range and increased accuracy with this highly flexible and deployable weapon system. Light forces will all be receiving the ground-mounted 120mm system to increase their combat power and precision fires. Mobile variants will also be fielded to forces that currently employ the 120mm mortar system on wheeled (Stryker) and tracked (M113 variant) vehicles. PGMM also complements Future Combat Systems, which will include 120mm Non-Line-of-Sight Mortar variants.

PGMM is following an incremental development approach at the request of its combat developer, the U.S. Army Infantry Center. Increment 1, scheduled to begin flight demonstrations in 2006, will give maneuver commanders the ability to defeat high-payoff targets — such as enemies protected by earth and timber bunkers, masonry walls or lightly armored vehicles — with just one or two rounds. Future versions will have increased maximum range beyond 7,200 meters, be able to engage more targets and have increased maneuverability.

The system's prime contractor, Alliant Techsystems, of Plymouth, MN, is responsible for system integration as well as subsystems and software development. Key subcontractors include BAE Systems (Nashua, NH), which is developing the semiactive laser seeker, and Pacific Scientific (Valencia, CA), which is developing the midbody thrusters that will maneuver the round.

PM Mortars has also established close ties with government organizations that provide the key enabling systems or personnel that will make PGMM a success when fielded. These include the:

- U.S. Army Field Artillery School, proponent for forward observers and equipment.
- U.S. Army Aviation Center, proponent for reconnaissance, attack and unmanned aerial vehicle designators.
- Program Executive Office (PEO) Simulation, Training and Instrumentation, proponent for live, constructive and virtual training systems.
- PEO Ground Combat Systems, proponent for mortar prime movers.
- PM Sensors and Lasers, proponent for laser designators.

An XM395 round looks very much like a standard 120mm mortar round, with fixed tail fins, a four-zone charge system and a large warhead. The main difference is the incorporation of a semiactive laser seeker in the nose, coupled to thruster rockets in the sides of the round, which will provide the endgame guidance required to hit small targets with a high degree of accuracy.

How It Works

To employ the XM395 PGMM, a forward observer identifies a target and then sends a request for fire digitally or by voice to the Battalion Fire Support Element. Once the mission is approved, a message goes directly to the Mortar Fire Direction Center, which then chooses the mortar weapon platform best positioned to conduct the fire mission. The mortar crew then prepares the round for firing, just as they would a standard round.

After the fire command, the round flies ballistically to apogee and then begins looking for the laser energy reflected off the target. Within

The XM395 PGMM will deliver an increased maximum range beyond 7,200 meters and allow Soldiers to defeat a variety of hardened and stationary targets using fewer rounds than conventional mortar rounds. Here, SPC Camille Fossier, 2nd Battalion, 156th Infantry Regiment, 3rd Infantry Division, fires his mortar during a recent combat mission in Iraq. (U.S. Army photo.)



approximately 10 seconds of impact, the forward observer receives a message to begin lasing the target. The round's seeker detects this energy on the target and commands itself to fire thruster rockets to move itself to the target. Upon impact, the warhead detonates, with a high probability of eliminating the target.

PM Mortars is working very closely with the U.S. Army Infantry Center to make certain that it has correctly translated user requirements and is on track to develop an affordable and effective training concept and deliver a precision mortar munition that will be economical, simple to use and highly effective against multiple target types.

PETER J. BURKE is Chief, Precision Effects Branch, PM Mortar Systems. Burke's prior PM Mortars assignments include managing the PGMM Component Advanced Development program and Project Director, XM95 Mortar Fire Control System. Burke has a B.S. in industrial engineering from the New Jersey Institute of Technology and an M.B.A from the Florida Institute of Technology. He is an Army Acquisition Corps member and is Level III certified in systems planning, research, development and engineering.